Amendments to the Drawings:

The attached sheets of drawings include changes to Figures 1-12. These sheets, which include Figs. 1-12, replace the original sheets including Figs. 1-12.

Attachment: Replacement Sheets

<div align="center">REMARKS</div>

This amendment is being filed in response to the Office Action having a mailing date of November 16, 2007. Various claims are amended as shown. No new matter has been added. With this amendment, claims 1-58 are pending in the application.

I.   Preliminary comments

The present Office Action requested "Prior Art" designations for Figures 1-2. Accordingly, replacement sheets of drawings, having the requested designations for Figures 1-2, are being submitted herewith. These replacement sheets of drawings have also formalized Figures 1-12. It is kindly requested that these formal drawings replace the drawings that are currently on file.

The present Office Action objected to claims 1, 7, and 57 due to certain informalities. Claims 1, 7, and 57 are amended as shown to address these objections.

II.   Rejections under 35 U.S.C. § 101

The present Office Action rejected 35 U.S.C. § 101 for allegedly being directed towards non-statutory subject matter. Specifically, the present Office Action asserted that the claims "merely disclose steps/components for converting digital data to be processed without further disclosing a practical/physical application or a useful and tangible result ..."

To address this rejection, independent claim 1 is amended to recite, *inter alia*, "a conversion circuit ... adapted <u>to reduce processing time of a high volume of said data by a computer, by generation of a transform</u> ..." It is respectfully submitted that this language in amended claim 1 provide the requested "practical/physical application or a useful and tangible result."

For example, a conversion circuit to reduce processing time, by performing a transformation of data, is indeed a practical/physical application. Moreover, the reduction of processing time is clearly a useful result and is tangible, for instance the reduction in processing time can be physically (tangibly) measured. For instance, in the field of sorting in a great number of situations, there is a need of sorting different values stored in an information handling

system, and a key technical problem resides in the capability of achieving the sorting process in a reduced time. One of the presently disclosed embodiments thus provides a new type of electronic integrated circuit achieving processing of data at ultra-high speed. The disclosed embodiment(s) for example provide such a method for quickly and efficiently extracting a maximum or a minimum between values that are stored in a computer, for the purpose of identifying one particular value to be subsequently used in further process.

Further, the claimed "conversion circuit" to "to reduce processing time of a high volume of said data by a computer, by generation of a transform" also provides claim 1 with a "concrete" result. MPEP § 2106 states that "the process must have a result that can be substantially repeatable or the process must substantially produce the same result again," citing *In re Swartz*, 232 F.3d 862, 864, 56 USPQ2d 1703, 1704 (Fed. Cir. 2000). In the present situation, the generation of the transform by the conversion circuit and other elements of claim 1 are substantially repeatable or substantially produce the same result: a reduction of the processing time of a high volume of the data, which can clearly be repeated to produce the same result again.

Accordingly, it is respectfully submitted that claim 1 meets statutory subject matter requirements, and it is kindly requested that the rejections under 35 U.S.C. § 101 be withdrawn.

The various other independent claims are amended to recite language generally along the lines of that in claim 1, pertaining to reduction of processing time. Accordingly, it is respectfully submitted that said independent claims are also allowable under 35 U.S.C. § 101.

III.   Discussion of the claims and cited reference

The present Office Action rejected claims 1-58 under 35 U.S.C. § 102(b) as being anticipated by de Tremiolles (U.S. Patent Application Publication No. 2001/0013048). For the reasons set forth below, it is kindly requested that this rejection of the claims be reconsidered and withdrawn.

A.   Independent claim 1

Independent claim 1 as amended herein recites, *inter alia*, that "an original code of the digital data to be processed includes a signed type." This newly added limitation in claim 1 was taken from the subject matter of previously presented dependent claim 13. It is respectfully submitted that de Tremiolles does not meet this limitation.

For example in originally rejecting claim 13, page 6 of the present Office Action cited in general Figures 2-6 of de Tremiolles, in particular Figure 2. However, it is respectfully submitted that none of Figures 2-6 nor the accompanying description of de Tremiolles disclose, teach, or suggest "an original code of the digital data to be processed includes a signed type."

Indeed, page 6 of the present Office Action has failed to cite any specific passage that describes the original code of de Tremiolles' digital data. A text search of de Tremiolles, in preparation of this response to the present Office Action, has failed to locate any disclosure in de Tremiolles that provides a description of an original code of his data, in particular a signed type. If the Examiner believes that de Tremiolles does indeed provide this feature, it is kindly requested that the specific passage(s) of de Tremiolles that teaches this feature be identified in the next communication.

Furthermore, it is noted that the Abstract of de Tremiolles only mentions "Numbers coded on q bits ..." Further, paragraph [0011] of de Tremiolles mentions "a set of p numbers referred to as Numbers coded in binary format on q bits ..." It is respectfully submitted that this is the extent of de Tremiolles' teachings with respect to the code/coding of his digital data. Nothing is disclosed, taught, or suggested by de Tremiolles that his coding "on q bits" includes a signed type, such as recited in claim 1.

Accordingly, it is respectfully submitted that claim 1 is allowable over de Tremiolles.

B.   Dependent claim 13

Dependent claim 13 as amended herein recites that the original code of the digital data to be processed further includes "an unsigned type, Gray, Johnson, and includes a mantissa

and an exponent." It is noted that amended claim 13 recites these features in the collective sense, rather than in the disjunctive sense, such that all of these features must be found in the cited reference in order to render claim 13 unpatentable.

As previously alluded to above, the present Office Action (as well as a text search through de Tremiolles) has failed to identify any specific teaching in de Tremiolles that the original code of his digital data further includes "an unsigned type, Gray, Johnson, and includes a mantissa and an exponent." That is, de Tremiolles fails to disclose, teach, or suggest that his digital data has original code that includes (collectively rather than disjunctively) "an unsigned type, Gray, Johnson, and includes a mantissa and an exponent" such as recited in claim 13.

Accordingly, it is respectfully submitted that claim 13 is allowable.

C.   Other independent claims

The various other independent claims are amended as shown to similarly recite that an original code of the data includes a signed type. For reasons set forth above that de Tremiolles fails to disclose, teach, or suggest this feature, said independent claims are allowable.

D.   Other amendments

Various claims (with the exception of claim 37 and its dependent claims) are amended as shown to clarify that certain recitations contained therein and in their related claims do not fall within the scope of 35 U.S.C § 112, sixth paragraph.

Other amendments are made to the claims as shown to provide consistent antecedent basis, to more precisely recite the subject matter contained therein, to make typographical/grammatical corrections, and/or to otherwise place such claims in better form.

IV.   Double patenting rejection

The present Office Action provisionally rejected claims 1-58 based on obviousness-type double patenting, as being unpatentable over claims 9 and 17-18 of U.S. Patent Application Serial No. 11/039,644. For the reasons set forth below, it is kindly requested that this double-patenting rejection be reconsidered and withdrawn.

A.   Claim language

As a first consideration, it is noted herein that U.S. Patent Application Serial No. 11/039,644 has now issued in to U.S. Patent No. 7,315,909. Claims 9 and 17-18 in U.S. Patent Application Serial No. 11/039,644 now respectively correspond to issued dependent claims 8 and 15-16 in U.S. Patent No. 7,315,909. Dependent claims 8 and 15-16 and their corresponding base independent claims 1 and 10 of U.S. Patent No. 7,315,909 are reproduced below:

"1.   An arbitration method for a data transfer device in an architecture that includes n functional blocks, access to a resource by said functional blocks being regulated by an arbitration block, the method comprising:

exchanging information from a first one of said functional blocks via high level primitives defining particular commands selected from a subset of commands, and generating in response to said high level primitives a first critical rank vector that includes first and second components that are numerical values;

exchanging information from a second one of said functional blocks via high level primitives defining particular commands selected from a subset of commands, and generating in response to said high level primitives a second critical rank vector that includes first and second components that are numerical values;

receiving the critical rank vectors generated and applying an arbitration mechanism to at least one of the components of the critical rank vectors to uniquely identify the block accessing said resource; and

performing an adaptation function acting at least on one of said critical rank vector components.

8.   An arbitration method according to claim 1, further comprising applying a conversion function, using a T-transform, of each component of said critical rank vectors, each component being in a form $B[n-1]$ $B[n-2]...$ $B[2]$ $B[1]$ $B[0]$, said conversion function operating on a group of

elements in which a ranking relationship is defined, and changing each critical rank vector into a binary number composed of 2^n-1 binary elements T[x] with x=1 with 2^n-1:

$$T[2^n-1] \ T[2^n-2]. \ \ldots T[x]\ldots \ T[2] \ T[1]$$

where $T(x) = 0$ when x is strictly higher than R and $T(x) = 1$ when x is lower than or equal to R, R being a rank of vector B[n-1] B[n-2]... B[2] B[1] B[0] in said ranking relationship

10.   An arbitration method for a data transfer device in an architecture having n functional blocks communicating via agents, said agents generating critical rank vectors having at least two elementary components, said method comprising:

generating a request to an agent allocated to one of said functional blocks, said request having data volume information, time information, rate information or minimum latency information, according to a high level protocol;

converting, by the agent, said request into a critical rank vector including at least a first and a second component that are numerical values;

providing rival critical rank vectors to an arbitrator having a mechanism to extract a maximum or minimum from at least one of said components; and

performing an adaptation function acting at least on one of said critical rank vector components.

15.   An arbitration method according to claim 10, further comprising applying a conversion function, using a T-transform, of each component of said critical rank vectors, each component being in a form B[n-1] B[n-2]... B[2] B[1] B[0], said conversion function operating on a group of elements in which a ranking relationship is defined, and changing the critical rank

vector into a binary number composed of 2^n-1 binary elements $T[x]$ with $x=1$ with 2^n-1:

$$T[2^n-1]\ T[2^n-2].\ \ldots T[x]\ldots\ T[2]\ T[1]$$

where $T(x) = 0$ when x is strictly higher than R and $T(x)= 1$ when x is lower than or equal to R, R being a rank of vector $B[n-1]\ B[n-2]\ldots\ B[2]\ B[1]\ B[0]$ in said ranking relationship.

16.   An arbitration method according to claim 10, further comprising applying a conversion function, using a T-transform, of each component of said critical rank vectors, each component being in a form $B[n-1]$ $B[n-2]\ldots\ B[2]\ B[1]\ B[0]$, said conversion function operating on a group of elements in which a ranking relationship is defined, and changing the critical rank vector into a binary number composed of 2^n-1 binary elements $T[x]$ with $x=1$ with 2^n-1:

$$T[2^n-1]\ T[2^n-2].\ \ldots T[x]\ldots\ T[2]\ T[1]$$

where $T(x) = 1$ when x is strictly higher than R and $T(x)=0$ when x is lower than or equal to R, R being a rank of vector $B[n-1]\ B[n-2]\ldots\ B[2]\ B[1]$ $B[0]$ in said ranking relationship."

From the above-quoted language of issued claims 1, 8, 10, and 15-16 of U.S. Patent No. 7,315,909, it is abundantly clear that the recitations of dependent claims 8 and 15-16 contain not only the limitations present therein, but also contain the limitations of their respective base independent claims 1 and 10. That is, since claims 8 and 15-16 are dependent claims, they necessarily include the recitations of their respective base independent claims.

B.   MPEP guidelines

As a second (next) consideration, it is noted that U.S. Patent No. 7,315,909 has a filing date (January 19, 2005) that is later/subsequent to the filing date of the present application (December 22, 2003).

MPEP section § 804(II)(B)(1)(b) provides the following guidelines regarding obviousness-type double patenting (emphasis ours), in a situation where a patent (*e.g.*, U.S. Patent No. 7,315,909) that forms the basis for the double patenting rejection is filed later/subsequent to the present application (the application at issue):

"II. REQUIREMENTS OF A DOUBLE PATENTING REJECTION (INCLUDING PROVISIONAL REJECTIONS)

…

B. Nonstatutory Double Patenting

…

1. Obviousness-Type

…

(b) Two-Way Obviousness

If the patent is the later filed application, the question of whether the timewise extension of the right to exclude granted by a patent is justified or unjustified must be addressed. A two-way test is to be applied only when the applicant could not have filed the claims in a single application *and* there is administrative delay. *In re Berg,* 46 USPQ2d 1226 (Fed. Cir. 1998) ("The two-way exception can only apply when the applicant could not avoid separate filings, and even then, only if the PTO controlled the rates of prosecution to cause the later filed species claims to issue before the claims for a genus in an earlier application . . . In Berg's case, the two applications could have been filed as one, so it is irrelevant to our disposition who actually controlled the respective rates of prosecution."). In the absence of administrative delay, a one-way test is appropriate. *In re Goodman,* 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993) (applicant's voluntary decision to obtain early issuance of claims directed to a species and to pursue prosecution of previously rejected genus claims in a continuation is a considered election to postpone by the applicant and not administrative delay). Unless the record clearly shows administrative delay by the

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Office and that applicant could not have avoided filing separate applications, the examiner may use the one-way obviousness determination and shift the burden to applicant to show why a two-way obviousness determination is required.

When making a two-way obviousness determination where appropriate, it is necessary to apply the *Graham* obviousness analysis twice, once with the application claims as the claims in issue, and once with the patent claims as the claims in issue. Where a two-way obviousness determination is required, an obvious-type double patenting rejection is appropriate only where each analysis compels a conclusion that the invention defined in the claims in issue is an obvious variation of the invention defined in a claim in the other application/patent. If either analysis does not compel a conclusion of obviousness, no double patenting rejection of the obvious-type is made ..."

In the present situation, it is respectfully submitted that the three requirements set forth above have been met to compel a two-way obviousness test: (a) U.S. Patent No. 7,315,909 was filed after the present application; (b) the applicant could not have filed both applications as a single application; and (c) there was administrative delay by the U.S. Patent Office.

With regards to (a), U.S. Patent No. 7,315,909 has a later filing date, as previously set forth above.

With regards to (b), the applicant could not have filed the two applications as a single application. The first application (the present application) is directed towards a device to process digital data that includes a conversion circuit. The second application (U.S. Patent No. 7,315,909) is directed towards a subsequently invented "hierarchized arbitration method", which builds upon the subject matter of the first application by providing an arbitration method as recited in issued claims 1 and 10 above, which was not disclosed in the first application. Accordingly, it was not possible to combine the subject matter of both applications into one application, since the subject matter of the second application was not available for filing until January 19, 2004 (the priority date of the second application), which is after the filing date of the first application and also after the priority date of the first application..

With regards to (c), administrative delay by the U.S. Patent Office has caused the present application to remain in pendency (delayed examination), while the later-filed second application has issued into U.S. Patent No. 7,315,909. For example, a timely response to a Restriction Requirement was filed in the present application on February 20, 2007. However, it was not until almost 9 months later (November 16, 2007) that the present Office Action was issued in response to the filing of February 20, 2007.

C.   Two-way obviousness test

Since application of the two-way obviousness test is proper, as discussed above, the two-way obviousness test can now be applied between the claims of the present application and claims 8 and 15-16 of U.S. Patent No. 7,315,909.

As previously explained above, claims 8 and 15-16 of U.S. Patent No. 7,315,909 contain the recitations of their respective base independent claims 1 and 10, since claims 8 and 15-16 are dependent claims. The recitations of claims 1 and 10 (see claim language quoted above) are clearly not present in any of the claims of the present application. For example, the "exchanging information...," "applying an arbitration mechanism...," "performing an adaptation function...," etc. of claim 1 of U.S. Patent No. 7,315,909; and the "generating a request...," "converting, by the agent, said request...," "performing an adaptation function...," etc. of claim 10 of U.S. Patent No. 7,315,909, are clearly not recited in any of the claims of the present application. Thus, the test for obviousness fails (*i.e.*, there is no obviousness) when trying to determine whether claims 8 and 15-16 (which include the recitations of respective base independent claims 1 and 10) of U.S. Patent No. 7,315,909 are obvious in view of the claims of the present application.

As the MPEP stated above "an obvious-type double patenting rejection is appropriate only where each analysis compels a conclusion that the invention defined in the claims in issue is an obvious variation of the invention defined in a claim in the other application/patent. If either analysis does not compel a conclusion of obviousness, no double patenting rejection of the obvious-type is made." In the present situation, the obviousness-type double patenting rejection is not appropriate, since the inventions in claims 1, 8, 10, and 15-16 of

U.S. Patent No. 7,315,909 are not an obvious variation of the invention defined in the claims of the present application.

Accordingly, it is kindly requested that the obviousness-type double patenting rejection be withdrawn.

D.   Claim amendments

As an alternative or additional set of comments to address the double-patenting rejection, it is noted herein that various claims in the present application have been amended as shown above, to include recitations that are not explicitly recited in claims 1, 8, 10, and 15-16 of U.S. Patent No. 7,315,909. In view of these amendments, it is respectfully submitted that the double-patenting rejection has been rendered moot. Thus, the double-patenting rejection, which has been rendered moot, can now be withdrawn.

E.   Follow up

It is believed that the double-patenting rejection has been overcome (by application of the two-way obviousness test above) and/or has been rendered moot in view of the claim amendments.

However, if the Examiner still believes that the double-patenting rejections are still proper after having reviewed this filing, it is requested that the Examiner contact the attorney of record (Dennis M. de Guzman) by telephone to discuss further appropriate course(s) of action to address the double patenting rejection. It is hoped that such a telephone conversation can expediently resolve any lingering issues, such as by discussing proposed claim language, a possible filing of a terminal disclaimer, etc. The Examiner's cooperation in this regard would be very much appreciated.

V.   Conclusion

Overall, none of the references singly or in any motivated combination disclose, teach, or suggest what is recited in the independent claims. Thus, given the above amendments and accompanying remarks, the independent claims are now in condition for allowance. The

dependent claims that depend directly or indirectly on these independent claims are likewise allowable based on at least the same reasons and based on the recitations contained in each dependent claim.

If the attorney of record (Dennis M. de Guzman) has overlooked a teaching in any of the cited references that is relevant to the allowability of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact Mr. de Guzman at (206) 622-4900.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are believed to be allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

SEED Intellectual Property Law Group PLLC

/Dennis M. de Guzman/

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